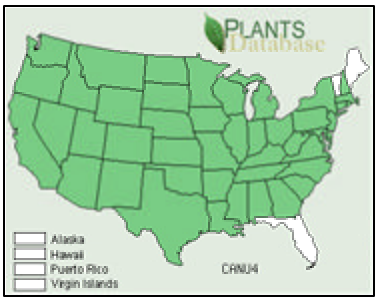
Musk Thistle - *Carduus nutans* L.

DESCRIPTION: Musk, or nodding thistle, a member of the aster family (Asteraceae), is an aggressive, biennial herb with showy red-purple flowers and painful spiny stems and leaves. Mature plants range in height from 1½ to 6 feet tall, and have multi-branched stems. Leaves are dark green, coarsely lobed, with a smooth waxy surface and a yellowish to white spine at the tip. The large disk-shaped flower heads, containing hundreds of tiny individual flowers, are 1½ to 3½ inches in length and occur at the tips of stems. Flower heads will droop to a 90-degree angle from the stem when mature, hence its alternate name, nodding thistle. Each plant may produce thousands of straw-colored seeds adorned with plume-like bristles.



DISTRIBUTION IN THE UNITED STATES: Musk thistle is found in every state except Maine, Vermont, Florida, Alaska and Hawaii.

HABITAT IN THE UNITED STATES: Musk thistle grows from sea level to about 8,000 ft elevation, in neutral to acidic soils. It invades open natural areas such as meadows, prairies, and grassy balds. It spreads rapidly in areas subjected to frequent natural disturbance events such as landslides and flooding but does not grow well in excessively wet, dry or shady conditions.

BIOLOGY & SPREAD: Musk thistle is usually a biennial, requiring 2 years to complete a reproductive cycle, but may germinate and flower in a single year in warmer climates. Seedlings emerge in mid to late July and develop into a rosette where plants can reach 4 feet in diameter. Flowers emerge in early May to August and seed dissemination occurs approximately one month after the flowers form. A single flower head may produce 1,200 seeds and a single plant up to 120,000 seeds, which may be wind blown for miles. Seed may remain viable in the soil for over ten years, making it a difficult plant to control.

CURRENT MANAGEMENT APPROACHES:

Mechanical Methods - Hand pulling is most effective on small populations and can be done throughout the year, but is most effective prior to the development of seeds. Flowers and seedheads should be bagged and disposed of in a landfill to prevent or minimize seed dispersal. Minimizing disturbance to the soil during removal activities will help reduce the chance of germination of seeds stored in the soil.

Biological Control- Two weevils have been introduced from Europe and released in the United States, the thistlehead-feeding weevil (*Rhinocyllus conicus*) and the rosette weevil (*Trichosirocalus horridus*). Have had some notable success, but may impact native thistles.

Chemical Methods- Foliar spraying is effective on established populations of musk thistle. Treatments should be applied during the rosette stage or prior to flowering. Glyphosate is a non-selective systemic (i.e., moves through the plant) herbicide that can kill non-target plants that are only partially contacted by spray. Triclopyr is selective to broadleaf species and is a better choice if native grasses are present.

Reference: www.nps.gov, http://plants.usda.gov